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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/955,296	09/19/2001	Shih-Chiang Tsao	06720.0068	8161
22852	7590	03/21/2006	EXAMINER	
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP 901 NEW YORK AVENUE, NW WASHINGTON, DC 20001-4413			PHAN, MAN U	
			ART UNIT	PAPER NUMBER
			2616	

DATE MAILED: 03/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	Application No. 09/955,296	Applicant(s) TSAO ET AL.	
	Examiner Man Phan	Art Unit 2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 29 December 2005.  
 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
 6) ☒ Claim(s) 1-13 is/are rejected.  
 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) ☐ All b) ☐ Some \* c) ☐ None of:  
 1. ☐ Certified copies of the priority documents have been received.  
 2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
 \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***Response to Amendment and Argument***

1. This communication is in response to applicant's 12/29/2005 response in the application of Tsao et al. for a "Method and apparatus for scheduling for packet-switched networks" filed 09/19/2001. This application claims Priority from Provisional Application 60253930 filed 11/30/2000. The amendment and response has been entered and made of record. Claims 1, 6-10 and 12-13 have been amended. Claims 1-13 are pending in the application.

The rejection of record with respect to claims under 35 U.S.C. 112, second paragraph are hereby removed based on applicant's amendment.

2. Applicant's amendment and argument to the rejected claims are insufficient to distinguish the claimed invention from the cited prior arts or overcome the rejection of said claims under 35 U.S.C. 103 as discussed below. Applicant's argument with respect to the pending claims have been fully considered, but they are not persuasive for at least the following reasons.

3. In response to applicant's argument that the combination of Fawaz et al. (US#6,714,517) and Dravida et al. (US#2002/0075875) fails to present a prima facie case of obviousness. In response, it has been held that a prior art reference must either be in the field of applicants endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). It is not necessary that a "prima facie" case of unpatentability exist as to the claim in order for "a

substantial new question of patentability” to be present as to the claim. Thus, “a substantial new question of patentability” as to a patent claim could be present even if the examiner would not necessarily reject the claim as either fully anticipated by, or obvious in view of, the prior art patents or printed publications. As to the importance of the difference between “a substantial new question of patentability” and a “prima facie” case of unpatentability see generally *In re Etter*, 756 F.2d 852, 857 n.5, 225 USPQ 1, 4 n.5 (Fed. Cir. 1985). Also, See MPEP § 2141.01(a) for a discussion of analogous and nonanalogous art in the context of establishing a prima facie case of obviousness under 35 U.S.C. 103. See MPEP § 2131.05 for a discussion of analogous and nonanalogous art in the context of 35 U.S.C. 102. 904.02.

4. Applicant's argument with respect to the rejected claim 1 (page 9, first and second paragraphs) that the cited references do not disclose “*identifying a flow for the packet by at least a flow identifier and available bandwidth information*”<sup>(1)</sup>. However, Fawaz et al. (US#6,714,517) discloses in Fig. 6 a functional block diagram illustrated the packet classification and scheduling of data communications comprises: receiving a plurality of data packets, each including classification information; classifying each of the data packets with one of a plurality of service level agreements (SLAs) corresponding to the classification information for each packet, includes the step of *classifying the packet based on classification information associated with the data packet*, and storing the data packet in one of a plurality of queues, and the one queue corresponding to the classification of the packet (*the Examiner interpreted this processing as for identifying packet's flow and classify the packet based on available bandwidth*) (Col. 7, lines 29 plus and Col. 14, lines 17 plus). In addition, each QoS

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Node in some embodiments of the Fawaz's invention, can also implement an internal flow control. When the occupancy of an output buffer 317 (Fig. 6) exceeds a high threshold, the scheduler 316 marks the SLA's that should be sent to that buffer as congested and skips those queues. When the occupancy of a queue in an SLA buffer 306-312 reaches a maximum value, the QoS Node stops transferring packets from the input buffers 302 to the SLA queue. When an input buffer 302 gets full, the ethernet interface sends a signal to appropriate packet switches to stop sending packets (*flow control techniques based on available bandwidth information*). The overall effect of this flow control both external and internal to the node is to distribute the cumulative packets from an overactive SLA inside the SLA queues of the QoS Nodes while keeping the other SLA's flowing, until the packet switch itself gets stopped. Accordingly, DBP in accordance with the invention exercises a finer congestion control than conventional flow control that shuts off a link completely instead of stopping only the overly active data streams (Col. 12, lines 21 plus). Applicant further asserted that the cited references do not disclose the step of "*processing the packet in the plurality of queues based on an accumulated bandwidth, size and a residue bandwidth of the packet*" <sup>(2)</sup>. Applicant's attention is directed to Fig. 6 of Fawaz, in which the scheduler places data packets into separate queues corresponding to one or more SLAs, and multiplexes the data packets from each SLA queue according to a golden ratio algorithm (*processing the packet in the plurality of queues based on priority order*) (Col. 7, lines 29 plus). In the same field of endeavor, Dravida (US#2002/0075875) discloses a method of packet handling, scheduling and flow control at a network element includes receiving packets on input links coupled to the network element, each packet having a quality of service (QoS) class indicating a service priority ranging from highest (1) to lowest (N). Received

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packets for each of the QoS classes from 1 to N-1 are stored in a common queue per QoS class while packets received for the lowest (N) QoS class are stored in link queues corresponding to the input links. The packets are transmitted from the common queues and the plural link queues to an output link according to a scheduling discipline (*processing the packet in the plurality of queues based on priority order*)([0013]). Furthermore, the limitations in <sup>(1)</sup> and <sup>(2)</sup> are newly introduced in the amended claims, and will be discuss as follows.

### ***Claim Rejections - 35 USC ' 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

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invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-3, 6, 7 and 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fawaz et al. (US#6,654,374) in view of Dravida et al. (US#2002/0075875) and further in view of Mizuhara (US#2002/0012348).

With respect to claims 1, 6, 7 and 12, the references disclose a novel system and method for scheduling packets in packet networks, according to the essential features of the claims. Fawaz et al. (US#6,654,374) discloses in Fig. 6 a functional block diagram illustrated the packet classification and scheduling of data communications comprises: receiving a plurality of data packets, each including classification information; classifying each of the data packets with one of a plurality of service level agreements (SLAs) corresponding to the classification information for each packet (*identify packet's flow and classify the packet*). Fawaz further teach the step of classifying the packet based on classification information associated with the data packet, and storing the data packet in one of a plurality of queues, and the one queue corresponding to the classification of the packet (Col. 7, lines 29 plus and Col. 14, lines 17 plus).

However, Fawaz does not disclose expressly the step of placing packets in priority order of queues. In the same field of endeavor, Dravida (US#2002/0075875) discloses a method of packet handling, scheduling and flow control at a network element includes receiving packets on input links coupled to the network element, each packet having a quality of service (QoS) class indicating a service priority ranging from highest (1) to lowest (N). Received packets for

each of the QoS classes from 1 to N-1 are stored in a common queue per QoS class while packets received for the lowest (N) QoS class are stored in link queues corresponding to the input links. The packets are transmitted from the common queues and the plural link queues to an output link according to a scheduling discipline ([0008]-[0013]).

However, Fawaz and Dravida do not specifically disclose the flow identifier and priority control method for use in packet transmission. In the same field of endeavor, Mizuhara et al. (US#2002/0012348) discloses in Fig. 2 a block diagram illustrated a configuration of a router device, in which the router device according to the present invention has a flow identifier for detecting a flow of packets (a set of packets having a certain property) input to the device, a flow rate monitor for detecting color information indicating match of actual traffic to a previously defined bandwidth under contract for each flow (Green), temporal violation (Yellow), or complete violation (Red), and a forwarding searcher for determining, from contents of a packet, output line information indicating from which line the packet is to be output ([0018]-[0023]).

Regarding claims 2, 3, Fawaz further teaches a guaranteed QoS in packet switched network, in which packets are classified according to an Service Level Agreements (SLA) by reading the source and destination addresses in the packet (See Fig. 6; Col. 7, lines 29 plus).

Regarding claims 10, 11, they are system claims corresponding to the method and apparatus claims 1-3, 12 above. Therefore, claims 10, 11 are analyzed and rejected as previously discussed with respect to claims 1-3, 12.

Regarding claim 13, This claim differs from claims of Fawaz et al. in view of et al. Dravida et al. in that the claim recited a computer program product for performing the same



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basis of steps and method, apparatus of the prior arts as discussed in the rejection of claims above. Therefore, claim 13 is analyzed and rejected as previously discussed with respect to claims 1-3, 10-12. It would have been obvious to a person of ordinary skill in the art to implement a computer program product in Fawaz et al. in view of Dravida et al. for performing the steps and apparatus as recited in the claim with the motivation being to provide the efficient enhancement to a queuing and scheduling packets in communications network, and easy to maintenance, upgrade.

One skilled in the art would have recognized the need for effectively and efficiently establishing connection using queuing and scheduling packets based on classification, and would have applied Mizuhara's flow identifier and priority control in packet transmission, and Dravida's novel use of the queuing packets in priority order into Fawaz's teaching of a method and apparatus for scheduling packets in packet switched networks. Therefore, It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to apply Mizuhara's router device and priority control method for use in the same, and Dravida's broadband system with transmission scheduling and flow control into Fawaz's method and apparatus for interconnection of packet switches with guaranteed bandwidth with the motivation being to provide a method and system for scheduling in packet switched networks.

8. Claims 4, 5 and 8, 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fawaz et al. (US#6,654,374) in view of Dravida et al. (US#2002/0075875) and Mizuhara et al. (US#2002/0012348) as applied to the claims above, and further in view of Tsang et al. (US#6,047,000).

With respect to claims 4-5 and 8, 9, Fawaz et al. (US#6,654,374) and Dravida et al. (US#2002/0075875) disclose the claimed limitations discussed in paragraph 4 above. However, these claims differ from the claims above in that the claims require the feature of calculating an allocated credit assigned based upon the size of packet. In the same field of endeavor, Tsang et al. (US#6,047,000) discloses a packet scheduling system in which credit is allocated to each incoming stream with reference to the onward transmission or otherwise of that stream. Fig. 2 is a block diagram illustrated a packet scheduling, where the data packets are variable in size and wherein each input stream is allocated a share of the bandwidth of the output transmission link, the selecting means comprises means for determining the credit allocated to each input stream, the bandwidth allocated to each input stream, and the size of the head of line packets waiting to be transmitted in each input stream, and means for sorting the head-of-line packets in accordance with the difference between the size of the head of line packets and the allocated credit as a proportion of the allocated bandwidth, whereby the input stream having an allocated credit closest to the packet size as a proportion of allocated bandwidth is selected for transmission. Following transmission of a packet the credit for the transmitted input stream is reset to zero (Col. 2, lines 27 plus).

One skilled in the art would have recognized the need for effectively and efficiently establishing connection using queuing and scheduling packets based on classification, and would have applied Tsang's teaching in allocated credit in packet scheduling system, Mizuhara's router device and priority control method for use in the same, Mizuhara's flow identifier and priority control in packet transmission and Dravida's novel use of the queuing packets in priority order into Fawaz's teaching of a method and apparatus for scheduling

packets in packet switched networks. Therefore, It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to apply Tsang's packet scheduling system, and Dravida's broadband system with transmission scheduling and flow control into Fawaz's method and apparatus for interconnection of packet switches with guaranteed bandwidth with the motivation being to provide a method and system for scheduling in packet switched networks.

### ***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Yazaki et al. (US#6,920,109) discloses a packet shaper.

Yazaki et al. (US#2004/0228274) discloses a bandwidth monitoring method and its device.

Yazaki et al. (US#2005/0163049) discloses a packet shaper.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION THIS ACTION IS MADE FINAL**. See MPEP ' 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after

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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

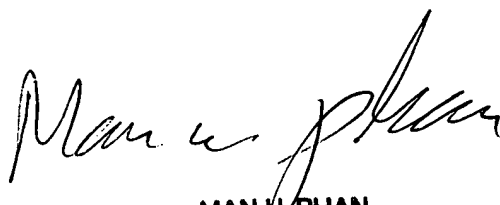
11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Phan whose telephone number is (571) 272-3149.

The examiner can normally be reached on Mon - Fri from 6:00 to 3:00 EST. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin, can be reached on (571) 272-3134. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have any questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at toll free 1-866-217-9197.

Mphan

03/15/2006.



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PRIMARY EXAMINER